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AUTHOR Schutz, Richard P.
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ABSTRACT

The methodology of research and the technology of development in education have advanced beyond "curriculum development," as activities associated with that rubric are popularly practiced. These advances provide the experiential basis for five actionable conclusions: (1) Programmatic development of integrated resources for use by students, teachers, and other instructional support personnel is the only replicable means known for reliably bridging research information and schooling effects; (2) State-of-the-art development technology for curriculum and for other facets of education has surpassed the boundaries of "curriculum development"; (3) Well-developed educational products can add to the professional prestige of the school community and can enhance their communications with constituent publics; (4) Development policy for education cannot reasonably be considered apart from policy for research and dissemination. Effective policy will insure that these functions co-operate and co-illuminate as they proceed; (5) Time and scale are the key manipulable margins for managing resource allocations for development in education. (Author)

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Beyond Curriculum Development

Richard R. Schutz
SWRL Educational Research and Development
Los Alamitos, CA 90720

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Abstract

The methodology of research and the technology of development in education have advanced beyond "curriculum development," as activities associated with that rubric are popularly practiced. These advances provide the experiential basis for five actionable conclusions.

1. Programmatic development of integrated resources for use by students, teachers, and other instructional support personnel is the only replicable means known for reliably bridging research information and schooling effects.

2. State-of-the-art development technology for curriculum and for other facets of education has surpassed the boundaries of "curriculum development."

3. Well-developed educational products can add to the professional prestige of the school community and can enhance their communications with constituent publics.

4. Development policy for education cannot reasonably be considered apart from policy for research and dissemination. Effective policy will insure that these functions co-operate and co-illuminate as they proceed.

5. Time and scale are the key manipulable margins for managing resource allocations for development in education.

BEYOND CURRICULUM DEVELOPMENT

There are some ideas whose time has come. There are others whose time has past. In science and technology, the move from the one category to the other is reasonably viewed as progress. In education, the same move is unreasonably viewed as failure. But call it what you will, during the last 20 years the term "curriculum development" has moved from the first category to the second.

In the Cold War and Sputnik era of the late 1950's, the nation was ripe for the efforts which came to be publicly and professionally identified as "curriculum development." Science had won WWII for us and was ushering in an astro-age. What was more fitting than for scientists to lend a few of their bright lights to lead education in the battle of brains just as they had formerly led the military in the battle of bullets. Between the launching of PSSC in 1956 and the torpedoing of MACOS in 1976, efforts conducted under the banner of "curriculum development" made numerous contributions to teachers and students and to the broad education community. But from an educational R&D perspective, it became clear as early as the mid 1960's that the enthusiastic initiative of leading scientists was an inadequate technical base for forwarding the expanded R&D in education which they had been instrumental in stimulating. "Curriculum development" today is as worn-out as Sputnik. But just as development for aerospace has advanced significantly in the interim since 1956, so has development for education. Professional courtesy and historical accuracy

dictate that we credit the past contributions of "curriculum development," but they do not demand that we retain the obsolete technology and confused connotations of the rubric.

From today's vantage point it is clear that you cannot solve problems in education by throwing scholars at them. Although knowledge is necessary, it is not enough. In sectors other than education, it is well recognized that a complex interaction of resources and events intervene between the invention of research data and the identifiable realization of research aspirations in practice. "Curriculum development" is an inapt designation and conceptualization for this interactive sequence. Better terminology and technology are provided by the rubric programmatic R&D.

Because programmatic R&D in education is new on the education scene, with a history of only 10-15 years, it is not yet a familiar matter. But the nature of the enterprise is straight-forward. Programmatic R&D in education is sustained, cumulative, analytic and empirical inquiry addressing matters of significant interest to the education profession and its constituent publics, with organizational effort of sufficient scale and duration to have identifiable effects that are regarded as beneficial and positive by the profession and its publics. That's a mouthful, but it's not mysterious.

The nation's current capability and activity in programmatic R&D for education relies largely on 5-10 publicly operated and regionally governed education laboratories and on about the same

number of R&D centers in major state and private universities (National Institute of Education, 1976). Programmatic R&D could entertainably be conducted in other settings such as corporate firms or state and local school agencies. But financial and structural exigencies and full concentration on fulfilling their historically grounded roles makes it unfeasible at present for schools or corporations to provide the economic or organizational environmental sustenance for a programmatic R&D organization.

Programmatic R&D in education complements but should not be confused with the efforts of independent researchers operating individualiy or with individual projects conducted independently. The interdisciplinary and interprofessional characteristics of programmatic R&D force the purview beyond that of the solitary researcher to permit individuals and groups to act in concert to do what they would find it impossible to do in isolation to create and implement new and improved products and processes for education.

Each programmatic R&D organization has found it necessary and desirable to give serious consideration to both curriculum and development, since curriculum, however defined, is central to schooling; and development, however conducted, is central to effecting identifiable improvements in schooling. Some programmatic R&D organizations have found the rubric "curriculum development" a convenient communication aid, but their operational referents for the rubric bear only incidental resemblance to those of the course content improvement projects and other "national" efforts which popularized the rubric. Other organizations, SWRL among them,

have never used the term "curriculum development" to characterize their efforts, but have nevertheless worked at the forefront in the last ten years in extending the technical boundaries of development for curriculum and for other facets of education operations.

The programmatic R&D organizations have produced new products and processes which are now useful for teachers and students, and they have also derived new technology and methodology which are now useful to the education and research communities. In attempting to communicate what has been learned from this experience, the fine grained lessons learned by these organizations generally or even by SWRL specifically must be ignored in the compressed communication. The 5 points enumerated below attempt to sketch broad actionable conclusions.

1. Programmatic development of integrated resources for use by students, teachers, and other instructional support personnel is the only replicable means known for reliably bridging research information and schooling effects. By the mid 1960's, the summary conclusion of the research community was that no known variant is consistently related to students' educational outcomes. The inescapable inference was that educational research has no demonstrable effects on schools and that schools in turn have no demonstrable effects on children. Researchers in education had created a situation in which they were their own best adversaries.

This situation has now been readjusted. Programmatic educational R&D has generated replicable results showing that schools can produce reliable instructional effects with children, irrespective of biosocial characteristics, when they use well-developed and comprehensive instructional products (Hanson & Schutz, 1975; Hanson & Bailey & Schutz, 1976) Hanson, Behr & Bailey, 1975; Hanson & Schutz, 1976). Such products are still not plentiful (National Institute of Education, 1975) but their present number is not the point. The point is simply that we do now have means of showing that research information can be incorporated into a form that is clearly visible to schools and that school personnel can use to produce clearly visible outcomes in classrooms. Other technical means of showing that research in education "does something" may be discovered in the future, but to date programmatic R&D is the only route known.

2. State-of-the-art development technology for curriculum and for other facets of education has surpassed the boundaries of "curriculum development." The practice of getting a critical mass of scholars to agree on course content, then writing texts and teacher materials reflecting this content, and terming the project "curriculum development" grew out of the days when curriculum was defined operationally as a guide or a set of objectives and when it was thought that instructional materials

incorporating the objectives could be handily prepared by authors. No development attention was given to the means for assessing and crediting the outcomes of the instruction; this was "handled" by shelf-item standardized achievement tests. No development attention was given to systematic, economical means for training teachers to use the new products. This was "handled" by shelf-item academic training. No development attention was given to resources for implementing the new products in the supra-classroom adminstrative units of schools. This was "handled" by shelf-item publishing practices.

We now know that there is considerably more to a well-developed instructional resource than simply objectives, teacher manuals, and student activity materials. The indicators of instructional accomplishments specifically coupled with the product warrant attention. Otherwise the creditable effects will be nil. We have available technology for developing these indicators.

We now know that the same technology for developing exportable products for student use can be applied to the instruction of school personnel in product use. By referencing this training to specific product use rather than to general professional education, dramatic economies in teacher time and district-exogenous training can be realized. The technology for developing these training resources is available.

We now know that for a publisher to assist a school district in installing an instructional capability, in schools in contrast to simply "selling materials," demands a radical reorientation on the part of both the school and the publishing communities. The experience for creating such a perspective has been verified (Baker, 1975).

When these elements are linked and integrated, one has a well-developed educational product. But developing such a product is a far cry from classic "curriculum development."

3. Well-developed educational products can add to the professional prestige of the school community and can enhance their communications with constituent publics. It is easy in retrospect to understand why the teaching profession does not ecstatically embrace new products. For the past 20 years the R&D leading to such products has been accompanied by open intentions to reform the efforts of teachers, render their efforts mindless by teacher-proof materials, or bring upon them accountability of undefined proportions, with any reluctance by teachers to register professional criticism viewed as inertia, apathy, or resistance to change. That the teaching profession generally has in fact agreeably tolerated such ignorant and insensitive conduct is a tribute to their conscientious

commitment to the improvement of instruction for students. However, one has only to examine the publications of professional teacher organizations to realize that their patience with such conduct is understandably wearing thin.

Any teacher can with sufficient personal effort develop his or her instructional materials. And such effort can be shared at the school or district level. There is no question that such efforts can be and have been conducted with quality. The limitations of such efforts are those encountered in the practice of any "hunting and fishing" or "cottage industry" enterprise. If the total time and effort of such investments are considered, there are simply easier and more economical ways to create and obtain the resources required for effective instruction. Moreover, the absence of instructional continuity for the child when his or her curriculum "starts over" with each teacher is a serious professional disadvantage.

Some would agree with this but would contend that publishers and media producers are doing all that is necessary. One need only to visit the exhibit hall at an education convention to recognize that there are indeed a large array of text series, audio-visual items, games, teacher materials and such, which are attractively packaged and economically merchandised. What more is needed? To use a commonplace computer term, what we have

with this array is a kludge. There is typically no continuity to the "supplemental materials." The text series typically have continuity, but they also typically have gaps, irrelevancies, and insufficient provision for insuring mastery. Moreover, they typically lack any accompanying evidence of past effectiveness in use or any means to communicate instructional accomplishments to those responsible for or interested in a child's accruing personal proficiency.

Technical means are currently available to permit teachers, administrators, and constituent educational publics all to contribute actively and intelligently to the development of any product from its documented inception. We now know how to conduct a programmatic development effort so that the architecture of the product can be viewed, examined, critiqued, and modified by all pertinent individuals and interests--public as well as professional--prior to any investment in materials preparation per se. This technical advance introduces dramatic economies in development costs. More importantly, it makes it possible for the school community to participate coequally rather than coincidentally in development efforts conducted in their behalf. And still more importantly it permits the school community and the public to look forward with full information to newly expected products rather than having

to "catch up" with the R&D community after the developed product is completed. These advances bring programmatic R&D from outside of to within the school community and provide a powerful mechanism for common communication to increase public confidence in the education profession.

4. Development policy for education cannot reasonably be considered apart from policy for research and dissemination. Effective policy will insure that these functions co-operate and co-illuminate as they proceed. By the mid 1960's it was evident that research, development, and dissemination in education are unreasonably viewed as linearly related. However, the virtual absence of systematically developed products meant that the enterprise of instructional R&D was exclusively research by default and there was only research information to disseminate. The balance has now been adjusted. We now know that research, development, and dissemination in education are identifiably different but desirably interdependent functions, with separable but interacting courses.

The emphasis in the past in the research-development relationship has been on what research can contribute to development. We now know that each product development effort inescapably begins at or behind the state-of-art provided by the research information of the time. But development inherently and intentionally moves away as rapidly from

the elegant abstractions associated with research to meet the demands of the complex natural environment in which the product is to be used. Development, in general terms, involves the repeated modification of organized and interacting materials and procedures so that the product will function reliably in an increasingly complex environment (Hughes, 1976).

The current availability of well-developed products provides feasible basis for considering what development can contribute to research in education. Viewed from the perspective of a researcher, these products provide ready-made "treatments." Just as teachers by and large have had to put their instructional resources together from components rather from products, so have instructional researchers by and large had to put together their "treatments." This practice has the same kind of "hunting and fishing society" and "cottage industry" consequences noted for teachers. Moreover, the current logistical complexity and financial expense of conducting research in classrooms when the solitary researcher attempts to start from scratch with each inquiry all but rules out its contemplation. When a product has been developed, its use in schools provides a "no cost" vehicle for research which can be managed and fielded as marginal-cost-and-effort rather than total-cost-and-effort enterprises. Such inquiry need be no less abstract

or elegant than in the past, but the product-referenced characteristics will insure against vaccuous and trivial treatments.

Viewed from the perspective of the public, the products resulting from development can provide a useful buffer for research. Just as development conducted in ignorance of state-of-the-art research information will be simple-minded, so research conducted in ignorance of state-of-the-art developed products will be simple-acting. Although in education, research has for historical reasons enjoyed more professional prestige than development, the imbalance favoring research now appears working to the detriment of research. Until research has been instantiated into products where use is direct and visible, it is difficult for any group other than researchers to recognize, let alone to advocate.

Developed products also provide the basis for reifying dissemination in education. Without products, dissemination most closely approximates an emperor's new clothes activity. We now know that reasonable exploitation of the benefits of developed products demands customized and continuous attention to their marketing, promotion, distribution, financing, and installation. These implementation aspects are as complex and important as the academic and pedagogical

aspects of educational R&D. But in the absence of well-developed products, the foundations for making dissemination more than a wishful hope have been lacking.

We now have the technical means to field research, development, and dissemination in education along parallel but complementarily interacting courses. We need policy to support and promote this positive pursuit.

5. Time and scale are the key manipulable margins for managing resource allocations for development in education. R&D in education has tended to operate with naive insensitivity and unabashed ignorance regarding matters of time and scale. Matters of scale have conventionally been dealt with in terms of relative referents internal to the R&D community rather than in terms of the reasonable resources required to effect a given development. Thus a "big project" in educational R&D would be regarded as a triviality in other R&D sectors, and "significant impacts" are typically expected--and promised--within term intervals that would be regarded as ridiculous fantasy in other sectors.

The prevailing attitude considers that any individual or organization could do great things "if given a chance." We now know that any BA-level individual--let alone a person with specialized training--can conduct a development effort of quality, just as they can grow vegetables in their back yard, make their clothes, conduct an experiment,

write a paper, and so on. But to anticipate from such small-scale development the same outcomes as can be expected from a critical mass of an R&D organization is unfair and unreasonable to both the individual and the organization-fielded enterprise.

Moreover, all developed products are usually viewed through the same lens, with little differential consideration given to their differential scope or comprehensiveness. We now know that a ten year time frame from inception to completion of a significant programmatic development effort is not unreasonable. But we also know that it is neither necessary to buy the total package of effort at the beginning or to hold everyone's breath to yield useful products until the end of the full ten year term. Finally, we know that all development efforts everywhere need not be started and brought to completion in mass. With continuous successive waves of effort by multiple organizations, useful products can be completed regularly rather than at the longer intervals necessary for a given development effort.

The impression is inescapable that the modal glorified image of the nation's educational R&D is a set of glorified dissertation exercises. We now know that the public and the profession will be better served by policy that moves beyond this image. We now know how to fuse science and technology, via what has come to be

known as programmatic R&D, to produce practical new products and processes for the instructional benefit of students and teachers. New policy should accelerate rather than retard this professional advance.

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